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Established 1859 Pioneer of the Gas Industry

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NEW YORK, SATURDAY, NOV. 7, 1925

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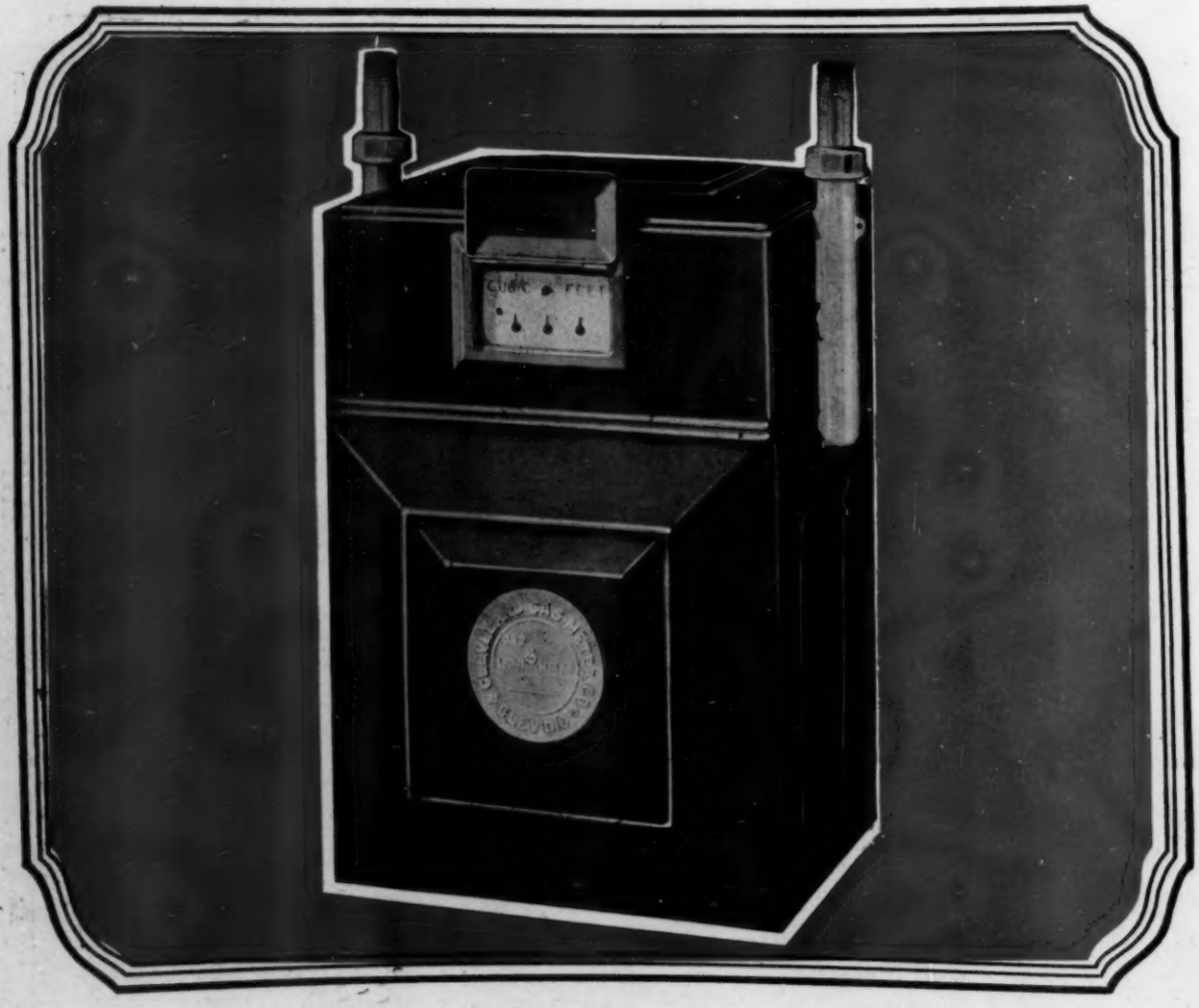

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American Gas Journal

SIXTY-SEVENTH YEAR

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"MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS"

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AMERICAN
GAS JOURNAL

Vol. 123. No. 23 NEW YORK, NOVEMBER 7, 1925 Whole No. 3549

Prometheus in Modern Garb

A gas company obtains inspiration from mythology and history for unique window displays

S. C. Rieser

Display Manager, the Laclede Gas Light Company, Member Display World Editorial Advisory Board

PROMETHEUS, the Titan, has made his debut in business.

Surely, you have heard of Prometheus! Well, perhaps the pursuit of the well-known and almighty dollar has allowed the mythology which you studied in school to become dimmed with the gossamer webs of time. Perhaps you don't place Prometheus right off.

Prometheus is the Titan hero who first gave fire to man. According to Greek mythology, he and his brother, Epimetheus, created man. After man and the world were finished, Epimetheus undertook the task of distributing among the animals the various gifts of courage, strength, swiftness, sagacity and other attributes. When he had concluded this task he discovered that he had nothing left for the awkward, featherless biped known as man.

The Gift of Fire

He appealed to Prometheus. The latter, with the aid of Minerva, made a hurried trip to Heaven, lit his torch at the chariot of the sun and brought down the gift of fire for man. With it, man's dominion over the earth and the other creatures of the earth was assured.

Besides giving man this wonderful gift, Prometheus took a kindly interest in him, teaching him civilization and the arts. Prometheus looked after his customers, so to speak; but, in so doing, he angered Jove, the ruler of gods and men. Jove had Prometheus thrown into the Olympian hoose-gow—which is to say that Prometheus was chained to a rock on Mount Caucasus, where a vulture preyed on his liver.

Now, in the year of our Lord, 1925, Prometheus, the Titan, has been given a place in modern business. He has helped to sell the Laclede Gas Light Company of St. Louis to the community which it serves. Here is the story:

Debut of New Merchandising Policies

The Laclede Gas Light Company recently decided that new merchandising policies must be instituted. As a public utility, the company touched the daily lives of most of the citizens in one way or another. But the contact was too impersonal. The citizens were not impressed to the desired degree either with the importance of the company's place in the community or with the vital need which it served.

How was the institution to be sold to the community? How was the public to be given a conception of the service rendered by the company? How were the people to be told of the variety of products available in the company's salesrooms?

These were the questions over which the executives pondered. A great many commonplace suggestions and ideas were presented, carefully considered, and ultimately dismissed because we wanted to do something different, something to arouse the entire public of St. Louis and its environs to the important role played by gas in the development of industry and domestic comfort.

Two Jobs to Be Done

Bear in mind that we wanted to do two jobs: to "sell" the company to its public and to sell the merchandise which the company retails.

Obviously, in handling the first problem, so intangible and invisible a substance as gas could not be displayed. Nor, if it could, did we have any place in which to display it.

The average American gas company public offices might well be the offices of almost any kind of an

1837—LACLEDE GAS LIGHT CO.—1925. *St. Louis had its beginning when on February 14, 1704, Pierre Laclede and party, having followed the broad waters of the Mississippi, landed on the western bank. Only a fur trading post until the consummation of the Louisiana Purchase in 1803, the real development of St. Louis began with the arrival of the first steamboat in 1817. Its fort and its river connections made it the gateway of the West. In 1837 the first gas company in St. Louis was formed—the forerunner of the Laclede Gas Light Co. of today, which, with its predecessor companies, has served St. Louis consecutively for eighty-eight years.*

THE SUN GOD.—*In mythology the Sun God rode his flaming chariot gayly through the heavens, giving light and heat to all the world. So he became the symbol of light and all that was good for mankind.*
Today, though man no longer worships the source of heat and light, still does he respect all creators of such.

PROMETHEUS—*so mythology tells us—pitying the helpless state of man, stole the torch of fire from Mt. Olympus and carried it to earth. In joyous exultation, thankful humanity stretched forth its arms to heaven and glorified in the change which had been wrought. Prometheus signifies "forethought"—and so today the citizens of St. Louis enjoy the fruits of the forethought which created the Laclede Gas Light Co. for their comfort and convenience.*

Three examples of beautiful allegorical displays, part of a group, shown in the windows of the Laclede Gas Light Company, St. Louis, during the celebration of their eighty-eighth anniversary. In the oval, Mr. S. C. Rieser, who directed the displays.

institution. As a rule, the view from the street merely discloses an extremely business-like counting room through a maze of gas ranges, water heaters and the like. The Laclede Gas Company was no exception.

It was decided that, as long as there was something to sell, it would be merchandised just like anybody else would do it. That meant, primarily, the creation of show windows and the scientific use of them.

Importance of Display of Merchandise

The display of merchandise in the proper way is recognized as one of the most important and productive means in the merchandising world of making sales. It matters not what the article may be, the watchword is DISPLAY IT, for I doubt if there is anything which is so sure a profit-maker for the intelligent merchant as the show window.

Human traits are read from the human features. Likewise the very character and soul of a store are expressed in the show windows of the institution. Just as a weak or expressionless face fails to attract us, so, too, careless, ill-arranged and monotonous window displays offer no incentive to better (and more profitable) acquaintance. And we did not even have poor show windows at the Laclede Gas Light Company.

The Situation Changed

But that situation was changed. The first manifestation which the city had of the change came when a corps of workmen descended on the windows and with their scaffolding and other impedimenta put an end to the long familiar view of prosaic white and blue enameled ranges and water heaters with clerks and counters to which the public and his wife had become completely inured. The gas company was up to something.

Inasmuch as a completely new and different merchandising policy was to be put into effect and inasmuch as the new show windows were to be on a parity with the most attractive in the city, it was decided that the first display would have to be (to lapse into the vernacular) a "knock-out."

To "Sell" with First Display

We decided to "sell" the company with the first display in the new windows. We cast about for a theme and settled on the romance of gas. The citizens of St. Louis were to be shown graphically and beautifully man's dependence on heat through the ages. They were to be shown how gas meets that dependence in a truly superior way, and how the Laclede Gas Light Company provides this superior fuel to the community which it serves.

Accordingly, an elaborate kaleidoscopic pageant of the Evolution of Heat was worked out. It was beautifully staged and dramatically presented to the city. It won instant and widespread approval.

Teaser Advertisements Pave Way

The way was paved by a series of teaser advertisements run in the local newspapers, followed by additional advertisements which gave slightly more information, and terminating with large copy in the Sunday newspapers announcing the display and stating that it would be unveiled at noon the next day, Monday.

Promptly at the appointed hour, the curtains were drawn on the eight new windows of the company's frontage on Olive and Eleventh streets, and the pageant was revealed to down-town St. Louis at a time when there were thousands going about their noontime promenade.

The drawn curtains formed a rich and sweeping frame just within the plate glass of the windows. Drapes of a neutral hue made up the sides. At the rear, occupying the focal point of each window, were columns of simulated bronze, forming a support for large frames of ivory green.

A Series of Paintings

In each frame was a painting, done in the manner of Maxfield Parrish, representing some historical or mythological fact in the story of heat. On the tiled floor beneath the paintings and in the middle-ground of each window, was a bronze plaque containing a brief explanation of the significance of the painting shown in that particular window.

One window was given over to the Prometheus legend; another to primitive man and his ceaseless efforts to keep alive the precious gift of the Titan; another the Sun God of mythology, who drove his flaming chariot daily across the heavens; another the Genii of Heat—Fire, which has been a giant in his service to mankind; another to the use of heat in the days of Cleopatra in Egypt; another to Dante's Inferno; another to the American Indians and their discovery that one stick turned rapidly against another will produce a spark. The corner window was used to symbolize the inception of the Laclede Gas Light Company in 1837, 88 years ago.

Enthusiastic Reception Resulted

The reception accorded the windows by St. Louis was even more enthusiastic than our own high hopes had anticipated. The Mayor voluntarily wrote a letter to the company praising the display for its intrinsic beauty and for the daring and breadth of its conception.

Art study clubs, art classes of the high schools, classes from the St. Louis School of Fine Arts of Washington University, women's clubs and many different civic bodies came in groups to make a study of the paintings. The Advertising Club of St. Louis paid a special visit and, through its president and secretary, conveyed its praise for the display. Advertising agency men, display men, artists, the press—in fact, the whole city reviewed our pageant of heat. The citizenry frankly praised and as frankly admitted that it was impressed.

(Continued on page 534)

Control in a Gas Works *

A description of methods and means used for regulating gas and gas making

Dr. Otto Dommer

A WELL defined and properly co-ordinated system of measurement affords the same control in an industrial and technical process as a system of bookkeeping does in a commercial enterprise.

There is no one who would doubt the fact that the keeping of books is an essential part of any business undertaking and that information on the costs involved in a process is available only when an accurate account is taken of all the moneys that are spent in it. It, therefore, follows that the same accurate accounting must be taken of all the various expenses involved in a technical process such as gas making in order to gain a comprehensive and intelligent idea of the cost of gas manufacture. The only way in which properly to determine such costs is to have available some means for establishing the consumption as well as the production of the various materials that are manufactured and employed in the gas-making process. Thus, it is necessary to have instruments and methods which will give accurate figures on consumption and production before it is possible to arrive at any conception whatsoever as to what gas making costs and as to how much must be charged for the product in order to return a profit on the undertaking.

Nature of the Methods of Mensuration

It is most advisable to determine these figures with the aid of automatic registering apparatus which show the results in the form of a continuous line on a paper chart. A rather comprehensive picture of what is required in the way of mensuration in a gas works can be obtained from figure 1. This really shows the measurements that must be made from the beginning to the end of the gas-making process.

In that figure the boiler house is seen at the upper right-hand corner, the steam produced therein being employed for the purpose of manufacturing water gas, as seen below. The first instrument is a carbon dioxide recorder for measuring the carbon dioxide in the generator gas. Another instrument at 2 measures the combined carbon dioxide and carbon monoxide in the flue gas. At 3 there is seen a temperature recorder for measuring and recording the temperature in the waste heat boiler, and the pressure in the same apparatus is taken by means of a pressure gauge, which is seen at 4. At 5 there is a multiple system of pressure gauges in which one gauge measures the pressure in the flue gas and another the pressure in the upper air passage. At 6 there is a pressure gauge for measuring the operation of the boiler plant and at 7 there is another for the same purpose. At 8 there is a combined carbon dioxide and carbon monoxide recording apparatus which measures the efficiency of the boiler furnace. At 9 there is located a pyrometer for measuring the temperature of the retort oven. At 10 there is a pressure recorder for measuring the pressure in the gas before the suction pump and at 11 there is an apparatus for measuring the density of the gas at a point behind the suction pump.

Determining Quality of Gas Itself

At 12 there is a carbon dioxide recorder for measuring the percentage of that gas in the water gas. The percentage of nitrogen in the produced gas is measured by means of a nitrogen recorder at 13, and

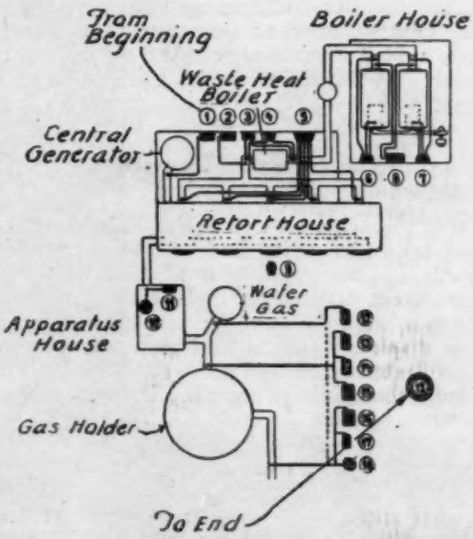

Fig. 1—Diagrammatic Representation of Control System in Gas Works

at 14 there is provided a recording meter for measuring the percentage of carbon dioxide in the gas production. Finally, at 15 there is an apparatus for measuring the thermal value of the gas made in the plant. At 16 there is a similar instrument for measuring the thermal value of the gas as it enters the distribution system for distribution throughout the city, while at 17 there is an oxygen measuring device which determines the proportion of oxygen in the gas and at 18 a pressure recorder which records the pressure in the city gas. At 19 there are represented the various laboratory apparatus which are used for the analysis of the gas, ammonia, tar, sulphur and naphthalene.

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*Translated for the American Gas Journal from Das Gas und Wasserfach, 1925, pages 257 ff.

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

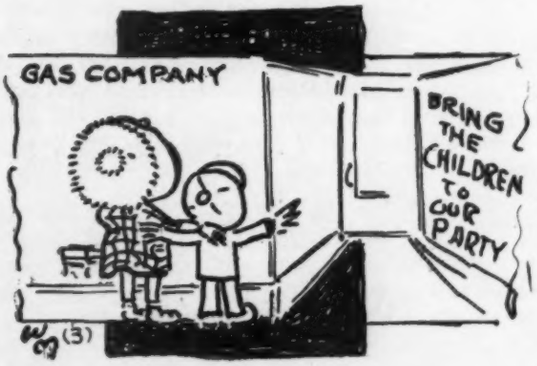
GET READY FOR TURKEY DINNER DAY

WHAT have you planned to stimulate sales before Thanksgiving Day? Have you planned a sale? Have you worked out a window display? Have you laid out your advertising? Possibly not! That's why we are offering the following suggestion for Turkey Day. First we are reproducing a suggestive advertisement which tells its own story; it comes from Helena, Montana. It holds ideas that may suggest something to the advertising man and the window trimmer. An advertisement from East St. Louis, Illinois, tells how a Free Turkey Sale was put over. During this sale the company decorated its window with autumn foliage, pumpkins and orange and black drapes, and each purchaser was given a turkey free of charge. Another company in the South had a pumpkin pie demonstration the week preceding Thanksgiving, while still another had a kiddies' party, where doughnuts and candy were cooked on a gas range.

Let Lorain be your Chef Thanksgiving Day
THANKSGIVING, the day of the world's greatest "at home" party, distinctively American — anchored deep in national sentiment.
This year let's go to the morning football game, or to the matinee. But how can we all go? Must not someone remain behind in the hot kitchen to prepare the great spread for the family—Roast Turkey, Giblet Gravy, Cranberry Sauce, Baked Squash, Mashed Potatoes, Mince and Pumpkin Pies?
NO! This year we all can go, for "Lorain" will be our chef Thanksgiving Day. The Lorain Oven Heat Regulator—wonderful device—will cook and bake all the principal elements of your dinner as perfectly as any master chef—and will do the work while you're miles away!
If your dinner is to be served at six, you can place all the good things in the magic oven, turn the little Red Wheel to 250 degrees and go "where you will" for four or five hours. When you return, everything will be deliciously done and ready to serve.
Come in and see how easy all this is done in a gas range equipped with the "Lorain". Ask us to explain its many remarkable advantages.
CLARK JEWEL Gas Ranges
Helena Light & Railway Co.

CHILDREN

THE display manager of a large department store told us the other day that he always reserved one window for children, meaning that there was always one window devoted to a display that would attract the kiddies, his idea being that if he could



interest the children the parents would buy. Gas companies may cash in on this idea, too, and while at first thought it may seem hard to work out displays that will attract children, when tried out it is not found to be so difficult a matter. Any miniature exhibit will attract children. Any display in motion will attract them, or any display wherein the display figures are children will attract them. A miniature house with a miniature gas range and water heater will arrest their attention, or a miniature model of a gas plant, a miniature store or a display of a space heater making baby comfortable will all bring the kiddies' noses to your window panes along with the grown-ups.

Five Salesmanship Pointers

How greater efficiency may be attained by the salesman

Lester G. Herbert

WE are all salesmen. This is true whether we sell goods, service, knowledge, instruction, or protection of some kind. And unless we are reasonably effective in our methods, we are bound to fall short of the results which we ought to win. So here are five practical pointers which everyone can use to the end of gaining greater efficiency, making more money, and winning larger satisfaction.

Don't Be Afraid

One of the surest things to prevent a successful sale of whatever you have to offer is fear. Many a man just takes it for granted that what he is offering for sale will not be likely to interest the prospect. That attitude invites defeat before you start. What are you afraid of?

Are you afraid that what you are offering is unworthy, or do you believe in it yourself? Are you afraid that the other person is better educated than you are? Well, what of it? Why not use that education to help the prospect see the advantage of what you have to offer? If you are better educated than the prospect, you surely have the advantage.

There are a lot of things of which people are really afraid, without perhaps acknowledging it in so many words. Some are afraid that they will not be able to interest or convince. That is merely a matter of enthusiasm and being thoroughly posted.

Banish fear from your mind! Say to yourself, "I have what this person needs, and I am going to prove it to him so pleasantly that he will see it as I do." Remember, if you have what the prospect actually needs, that you are doing him a favor to bring this opportunity to his attention.

Be confident and fear nothing except failure on your own part to do your best.

Use Your Imagination

Thought, suggestion, and imagination are just as real and vital forces as the X-ray, the radio, and electricity. We cannot see any one of either group, but we do not question that they exist and are capable of doing things.

If we go out to hunt big game, we take along the right kind of firearms and ammunition. We do not expect to bring down an elephant, a moose, or a bear with bird shot. We see ourselves sending a bullet crashing into the brain of the animal we are seeking, and eventually we do that very thing. Perhaps for nights on our hunting expedition we picture ourselves in our imagination as coming up stealthily upon a deer in the moonlight, and getting it just as the creature lifts its head from the pool where it has been drinking.

In the same way we should use our imagination to visualize in advance every step of an important sale or even a seemingly unimportant one, so that when the time comes we will make no false moves. If our imagination has been vivid enough, we will never be surprised or stumped, for we will have faced and mastered every situation and every kind of argument. The business man without imagination is like an automobile that is logy and fails to have the necessary pick-up on corners and hills. See yourself starting, carrying on, and concluding your sale skilfully and successfully.

The salesman who learns to use his imagination to good purpose can easily double and perhaps quadruple his sales.

Be Sold Yourself

A lot of people sell things about which they are rather indifferent. Perhaps they get a fixed salary anyway, and it really does not matter, they reason, whether they make this sale or not. Or if they are in business for themselves, they reason along these lines:

"Well, I can't make every sale, and I don't believe that fellow was interested, anyway."

That is mighty poor logic. It is the sort which leads in the wrong direction.

There are too many splendid propositions awaiting our salesmanship for us to waste any time selling anything which we are not convinced is worthy in every way. And every time we handle a sale in a perfunctory or careless manner, we lower our own standard and salesmanship—worth just as much, regardless of whether we are on a salary or in business for ourselves. Eventually, low-grade selling will dominate us, and our doom will then be sealed as far as business success is concerned.

Be thoroughly posted on what you are selling, and be so completely sold that temporary discouragements will not count.

The Customer's Needs

One of the most important points in salesmanship is to appreciate the fact that we should sell the customer what he needs, and it is our part to make him want it. Every salesman who ever started a new line had to grasp this point. For example, imagine the difficulties of the salesman who first started to sell typewriters or cash registers. People smiled

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As The Journal Views It

CO-OPERATION

It has often been said that the gas industry is an exceedingly complicated body made up of a number of parts, each with individual characteristics. The average gas company would, according to these characterizations, be composed of a large number of departments, more or less independent of each other. That such a physical structure is found in a number of the larger gas companies is true. But that in spite of this apparent heterogeneous make-up, it is a fact that the gas company functions well, as a whole. There is a close co-operation between all the various departments and each acts so as to help the others, with the result that the interests of the company as a whole are promoted.

Co-operation, therefore, within the gas company itself, is of considerable importance. It would not do at all, if the various departments did not function so as to form a combined working unit. It is similarly true that co-operation is essential between the gas company as a unit and the other branches of the gas industry. Thus, for example, it is of great importance that the gas company co-operate with the manufacturers. It is necessary that the gas companies give the proper support to those manufacturers of gas appliances who are deserving of it, and it is also important that the manufacturers themselves produce the correct kind of appliances so that the interests of the gas company are protected. It is impossible for the gas industry to progress unless both the manufacturers and the gas companies are imbued with the proper spirit of co-operation and of helpfulness toward one another. There are many problems that have to be met and they are difficult enough to solve even when the gas industry presents a united front to them. But if there should be lack of proper co-ordination among the various working elements in the gas industry, it is extremely difficult to see how these difficulties can be overcome.

There should also be the proper co-operation between the gas companies themselves. The fact that the gas industry is so fortunate as to possess such efficiently operating associations as the American Gas Association, Pacific Coast Gas Association and the other State associations, make it so much easier to secure proper co-operation between gas companies all over the country. The information that one gas company may obtain by experiment and observation in any of the phases of the gas business should be made available to all of the other companies. What is advantageous to one should be made public so that all may derive some advantage from it. At the various gas meetings much valuable information is revealed, and likewise in the various trade papers there are found many articles in which the gas man shows his eagerness to tell of the advances that he has made so that others in the gas fraternity may derive some benefit from them. This is a very happy state of affairs and is to be very highly recommended.

Finally, it must be mentioned that co-operation is necessary between the gas industry in the East and that in the West. Considerable has been done along these lines, not in the least being the meeting of the executive board of the American Gas Association early last year, in San Francisco. It must not be thought that the interests of the Pacific gas men are different from those of the Eastern gas men. It is true that local conditions make certain matters of importance in California that are of little account to Maine. However, the fundamental problems of the Pacific Coast gas industry are the same as those of the industry in the East. If the two geographically-separated divisions of the American gas industry work together in proper fashion, it cannot help but result that greater progress will be made in solving the problems that have such an important bearing on the present status and the future of gas in America.

Selling Househeating*

A few pertinent words on an important subject

John Hartog

Portland, Oregon

IT IS quite an honor for Portland, Oregon, to be called upon for a few words on Househeating and to be recognized as one of the pioneers, if not "the" pioneer city, in establishing the fact that Househeating with Gas could be made popular.

Recently other parts of the country have followed suit and the journals are so full of the news that Portland's success is no longer news. "Alas, how soon are we forgotten!"

To Make Selling a Success

To make selling a success, three things are necessary:

An article to sell.

A price that permits selling.

A buyer to sell to.

The article, the fuel, was there.

The price, however, had to be established, low enough to bring it within reach of the multitude. The rich, yes, they might be made to use it, but their total would be but a drop in the bucket, compared with the vast middle classes.

Someone had a vision into the future. Someone visualized the enormous potentialities of heating homes with gas. And, as the present interest in gas househeating points back to Portland as the pioneer—so Portland's example and leadership points to that someone, to Hilmar Papst of Portland, Oregon, as the one who had the vision.

Vision Is Necessary

"Without a vision the people perish," though it refers to prophetic vision, which allows God's creatures to glance into the Creator's plans for the future, nevertheless, the thought holds good when paraphrased into "People without vision don't get anywhere."

It was Mr. Papst who demonstrated that a low rate for increased consumption could be made to pay. Without this low rate I doubt whether the introduction of househeating could have been so quickly accomplished.

In our part of the West we have cheap, though poor, coal, and a superabundance of wood. We proved, however, that one could heat with gas for only very little more than with solid fuel.

So much for the price. Now for the demand.

Novel Method of Advertising

We adopted novel methods of advertising, daily ads. representing actual photographs from home scenes especially posed. The "Newlyweds" were pictured in their bondage of stoking. Day by day one feature of the agony was pictured, until finally we showed the dolce far niente—the sweetness of having no stoking to do—with gas heating governed by thermostatic control.

This series made such a hit that it was suggested to picture a woman in bed, rejoicing that she did not have to run down to build a fire. This suggestion led to the creation of a second series, called the "Gasco Widow," which made such a hit that it became the talk of the town at the time.

The result was a public interest in our offer to emancipate the people from their bondage and we followed the newspaper advertising with booklets containing the same photos, for mailing and canvassing.

As I said, the three things in selling are the gas, the price and the demand.

But in addition to a moderate fuel cost there is the necessity for an appliance that would not only create gas consumers, but "satisfied" consumers. It was in this particular line that our company was fortunate in having such men as E. L. Hall to create the right appliance, helped by such men as are here at this convention, R. M. Conner and C. R. Miller.

Advantages of Househeating

In playing up the advantages of househeating we harped on cleanliness, labor saving, uniform heat and healthfulness, and eventually cheapness. Yes, cheapness! For the average business man would gladly pay the amount of his gas bill to someone whom he could trust to look after the heating of his home day and night. That being so, he got his fuel virtually for nothing!

And the results? Well, I always look up to the Peoples Gas of Chicago as my basis for comparison. Chicago and the Peoples Gas are just about 10 times our size. Now, if Chicago had the househeating business we have, she would show 60,000 househeating installations besides 63,000 Radiant heaters, for our figures, with 300,000 population, is over 6,000 heating plants and 6,300 Radiantfires and 10,000 househeating meters. Of course, we have an ideal househeating climate. The so-called winters are mild, but deep, making some heat necessary for nine months in the year.

The question before our conventions five years ago was: Is househeating an idle dream or is it possible?

Is It Really Profitable?

Today the question is: Is househeating really profitable? I am not discussing that. My subject is "Selling," but don't forget that the more gas we sell for househeating the more carbon briquets we make and maybe there's enough profit in by-products to keep on sawing wood. I am not saying; my subject, aye, my very life, is "selling."

(Continued on page 538)

*Delivered at the Tuesday meeting of the Commercial Section, A. G. A. Convention, Atlantic City, N. J., October 13, 1925.

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 93

Heat and Change of State

A GENERAL EXAMPLE OF CALCULATION

Before leaving this subject of change of state it will be both instructive and interesting to consider a general problem involving both the melting of a solid and the vaporization of a liquid. For example, it is required to find out how much gas will be required to convert 1,000 pounds of ice at an initial temperature of 22 degrees F. into steam at atmospheric pressure, if the loss of heat by radiation, etc., is 25 per cent, and there is also 5 per cent loss of heat value due to incomplete combustion of the fuel. The British thermal value of the gas is 600 B.t.u. per cubic foot.

Division of Problem

The heat that is used for this purpose is divided into six different parts.

First, there is the heat that is required to raise the temperature of the ice from the original 22 degrees F. to the melting point, 32 degrees F.

Second, there is the heat that is consumed in changing the ice into liquid water at that temperature.

Third, there is the heat that is expended in raising the temperature of the water from 32 degrees F. to 212 degrees F., the boiling point at atmospheric pressure.

Fourth, there is the heat required to convert the liquid water into the vapor condition at the boiling point, 212 degrees F.

Fifth, there is the correction or addition due to the incomplete combustion of the fuel.

Sixth, there is the addition required to take care of the radiation losses, etc.

It is well in a case like this to divide the heat calculations up into the individual parts noted above.

1. Raising the Temperature of the Solid

The heat required for this operation is the product of the weight of ice by the specific heat by the difference in temperature. The latter is 32 minus 22, or 10 degrees F., the specific heat of ice is 0.504 and the weight of the ice is 1,000 pounds. Thus,

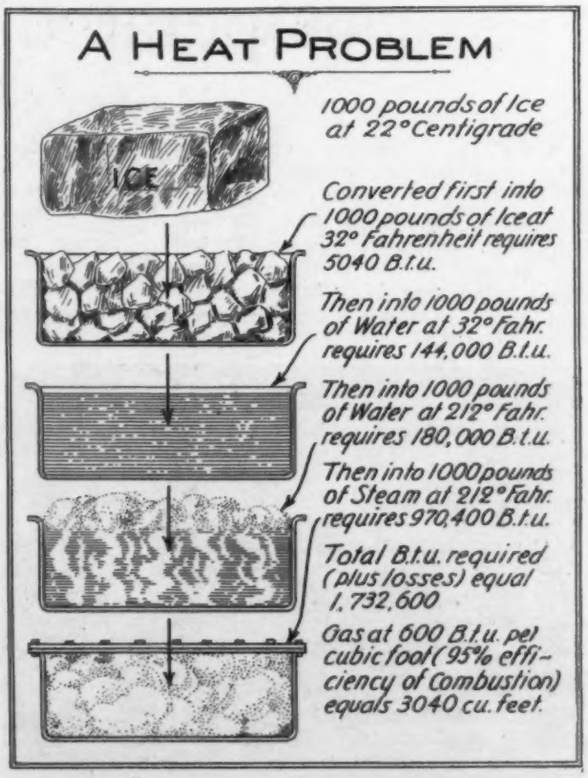
Heat required (1) = 1,000 × 0.504 × 10, or 5,040 B.t.u.

2. Latent Heat of Fusion

The latent heat of fusion of ice is 144 British thermal units per pound. In order, therefore, to melt 1,000 pounds of ice there will be required 144 × 1,000 or 144,000 British thermal units. (2) The water at the conclusion of the melting process will still be at the freezing temperature of 32 degrees F.

3. Raising Temperature of Water

The third part of the consumption of heat is in raising the temperature of the water from 32 degrees F. to the boiling temperature, 212 degrees F. The thousand pounds of ice, now in the form of water, must first be elevated to that temperature before conversion into steam can take place. The


A HEAT PROBLEM
1000 pounds of Ice at 22° Centigrade
ICE
Converted first into 1000 pounds of Ice at 32° Fahrenheit requires 5040 B.t.u.
Then into 1000 pounds of Water at 32° Fahr. requires 144,000 B.t.u.
Then into 1000 pounds of Water at 212° Fahr. requires 180,000 B.t.u.
Then into 1000 pounds of Steam at 212° Fahr. requires 970,400 B.t.u.
Total B.t.u. required (plus losses) equal 1,732,600
Gas at 600 B.t.u. per cubic foot (95% efficiency of Combustion) equals 3040 cu. feet.

temperature differential is 212 minus 32, or 180 degrees F. Each pound of water will, therefore, need 180 British thermal units in order that its temperature is raised to the boiling point, for the specific heat of water is unity within that range of temperature. Thus the total amount of heat required in this operation is found from the following:

180 × 1,000, or 180,000 British thermal units (3).

4. Latent Heat of Vaporization

It is next necessary to convert the water at 212 degrees F. into steam at 212 degrees F. Each pound of water will require 970.4 British thermal units in order to be vaporized. This means a total consumption of heat for vaporization as follows:

970.4 × 1,000, or 970,400 British thermal units (4).

The total amount of heat that is required to perform the entire operation, as described above, will then be the sum of the four individual results, thus:

Total heat, 5,040 + 144,000 + 180,000 + 970,400, or 1,299,400 B.t.u.

The Losses

This would be the quantity of heat that is required to bring about the change in state if there were no losses to be considered. But in any commercial operation there are always losses of one sort or another, so that the total amount of heat must be divided by the efficiency factor, which takes into consideration the heat losses.

Thus, inasmuch as the loss of heat by radiation and conduction is 25 per cent, the above figure of total heat must be divided by 0.75 to obtain the gross amount of heat required. Hence,

$$\frac{1,299,440}{.75} = 1,732,600 \text{ B.t.u.}$$

In other words, the total amount of heat that must be supplied by the gas is 1,732,600 British thermal units.

It has been assumed that the thermal power of the gas used is 600 British thermal units and that the efficiency of combustion is 95 per cent, which means a loss of 5 per cent. Thus, the effective calorific power of the gas is not 600, but a certain fraction of that amount, which is,

600 × 0.95, or 570 British thermal units.

The total amount of gas required for this operation is therefore found from the following calculation:

$$\frac{1,732,600}{570} \text{ or } 3,040 \text{ cubic feet of gas.}$$

Pacific Coast Factories Run Gas Operated Cafeterias

Charles W. Geiger

FACTORY owners are beginning to realize that the movement for providing a simple tasty lunch is a big asset to the institution. It helps the employee to better help the employer. Some factories figure to sell at cost, which is the usual practice. A few figure below cost, while others merely charge a nominal sum. In some instances, separate rooms are maintained for heads of departments and officials, and another for office people, while a third room is provided for the rank and file.

A Typical Gas Fired Cafeteria in Industrial Plant

The Prince Canning Company in Oakland operates a cafeteria which is patronized by about 50 per cent of the employees. The kitchen equipment is all gas, consisting of two Garland restaurant ranges, open top, with serving and gas steam table, gas coffee urns, etc. The company pays the cost of the gas fuel, which amounts to about one-third of a cent per person served. The company furnishes all equipment free. The management says the results fully justify the expenditure.

Food Company's Equipment

The Pacific Coast Shredded Wheat Company plant in Oakland has a model dining room and kitchen. The kitchen equipment consists of one Garland hotel range, salamander broiler with modern urns and steam tables. The women employees are served without charge, but a charge is made for the men. Separate dining rooms are maintained for the women and men. There are individual tables for four in neat wickerware design. The tables are each supplied with a vase of flowers, giving a homelike and restful effect.

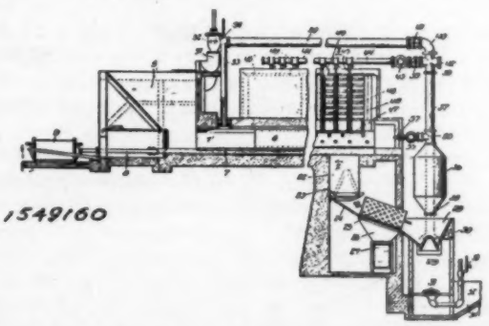
The California Cotton Mills in Oakland have a separate building built especially for a cafeteria,

(Continued on page 535)

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

GAS CARBONIZING APPARATUS

GAS is made from coal in the apparatus, which is shown in the accompanying illustration, and which is patented in the United States, Patent 1,549,160. This apparatus comprises a bench of coking retorts of the type that is intermittently discharged. A part of the content is thus removed and



the coke which is formed in the retorts falls into a feed hopper which is connected with a gas generator. A screening device which is shown at 25 is used for the purpose of eliminating certain portions of the coke before it falls into the gas generator.

REGULATING GAS FLOW FROM RETORTS

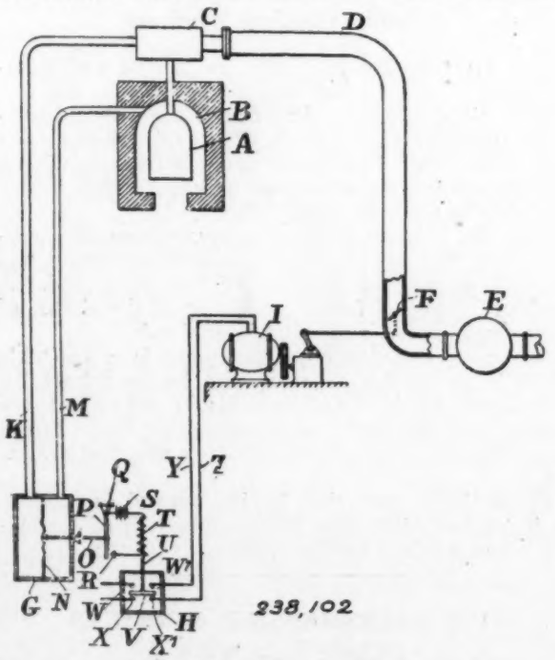
REGULATION of gas flow is obtained in such a manner with the aid of the apparatus which is described below that the same pressure is maintained in the retort as in the heating flues.

A gas retort A is heated in a flue B, through which pass the heating gases. The retort A is connected directly, or through a hydraulic main C and a suction pipe D, with any desired exhauster E. In the suction pipe is mounted a throttle valve F.

From the gas retort A or from the hydraulic main C, and the heating flue B surrounding the gas retort, a pipe leads to a differential pressure measuring device G divided by a diaphragm N into two compartments in which terminate two pipes K and M. The diaphragm is connected to an operating lever F movable on the point O by means of a guide-bar O. The lever abuts against a contact R.

To this contact, as well as to the lever P, an electrical circuit is connected, into which is inserted a battery S and a solenoid T. Within this latter a rod U consisting of soft iron and carrying at its lower end a contact plate V is provided. The latter is able to close, according to its position, either the two contacts W, W¹, or the two contacts X, X¹, which are connected to two conducting wires Y and Z and are housed in a casing H into which extends also the rod U. The two conducting wires Y and Z run to the motor I; and according as the contacts W and W¹ of the conducting wire Z are closed, and this latter is supplied with current, or the contacts X and X¹ of the wire Y are closed, and this latter is supplied with current, the motor I rotates in one or the other direction, and moves the throttle or butterfly valve F correspondingly.

If, therefore, the pressure of the gas supplied through the conduit K increases, the contact P R will be closed, the solenoid excited, and the contact plate V lifted, whereby the contact W and W¹ will be closed, and the motor caused to rotate in the cor-



responding direction. If, reversely, the pressure of the fluid supplied through the conduit M increases, the contact P R will be reopened, the contact plate V will fall by its own weight, and the contacts X and X¹ will be closed, in consequence whereof the direction of the motor I will be reversed and the butterfly valve will be turned in the opposite direction. Therefore, as the pressure inside or outside the gas retort becomes greater or smaller, the butterfly valve is operated in one or the other direction. As soon as the pressure in the interior of the gas retort increases, the motor I will be switched so that the butterfly valve will open more fully, and an increased withdrawal will take place until the pressures are balanced. If the pressure in the heating flues outside the gas retort rise, the butterfly valve will close in order to insure a corresponding increase of pressure in the interior of the gas retort by a correspondingly smaller gas withdrawal. —British Patent No. 238,102.

PROMETHEUS IN MODERN GARB

(Continued from page 525)

New Displays

But this was only the beginning. When the edge had worn off this first exhibition, the windows were changed. The new displays included the merchandise and appliances sold by the company. The beauty of the setting employed in the pageant of heat was continued.

The romance of the gas industry was not allowed to become forgotten. Along with the merchandising windows there has subsequently been a steady succession of imaginative pictures and bas-reliefs to continue the presentation of the original theme and to project both it and the wares which we have for sale deep into the public's consciousness.

Public Watches Windows

The first display had been so unique and compelling and subsequent displays have, on the one hand, carried on along the lines of the original windows and have at the same time depicted gas company merchandise in a way never before seen here, that the people maintain their interest and continue to WATCH OUR WINDOWS.

Here in a metropolitan center, where the popular taste is a sophisticated taste, the unusual had been done and the unexpected had happened. A modern Titan had freed himself from the chains of commonplaceness, and mortals applauded.

And a metropolitan gas company is a veritable Titan bringing fire to man that he may heat his home, cook his food and light his forges to turn the minerals of the earth into everything from carpet tacks to motor cars, from tiny toys to great Leviathans.

Prometheus, now that he is engaged in modern business, is finding that the combination of Promethian and modern methods pays.

FIVE SALESMANSHIP POINTERS

(Continued from page 528)

wisely at the ridiculous idea of putting three or four hundred dollars or more into a box to hold their money. Many of them said:

"I can take care of the money all right, if I can get hold of it."

But the cash register salesman kept pegging away, and today that industry represents one of the largest in the country, and is a monument to the vision of its promoters.

The Typewriter

The man who started to sell typewriters met the same sort of come-back. People said:

"A pen and ink will do good enough for me. I can't afford one hundred dollars for a toy like that. I have always written in long hand, and I probably always shall."

But the salesman kept pegging away, and today the click of an enormous army of typewriters is heard throughout the land and all over the civilized world. Show people what they need and they'll buy it, but first you must be sold yourself.

Occasionally, after a discouraging experience, doubt is born in the mind of the salesman.

Doubt is another name for fear, and unless the salesman is mighty careful at this point, he will lose out and weaken. Right then and there take yourself in hand and resell yourself on your proposition. Then you will tackle the next prospect with more zeal and confidence than ever.

The Law of Averages

Business statistics show us that the law of averages is constant, and as a result we can expect a certain percentage of successful efforts and a certain percentage of unsuccessful ones. Let us examine this obvious truth.

Suppose that you and I undertake to make ten sales in a given time. We only succeed, however, in bringing five of them to a successful climax. On each five sales we make a clear profit, however, of two dollars. Our total profit is ten dollars. But in reality we have done just as much work on the five sales that refused to bear fruit, and so in actual returns we have ten dollars as a profit for ten sales efforts. Or we have averaged one dollar profit on every sale we undertook to handle. In other words, it is not fair to assume that part of the sales netted us two dollars and part brought us nothing. If we want to increase our average of successful sales from 50 per cent to 75 per cent or more, we *must* make a more effective selling effort every time, and this will gradually bring the law of averages—our average—up.

In this connection it is well to remember that if we are to increase our successful efforts, we must analyze carefully how and why we failed in some cases, and how and why we succeeded in others. We must come to know people and arguments and sales methods as a musician knows his notes, his instrument, and his audience. This means a constant study and an intense interest in what we are doing and in the results we are gaining. The successful salesman is effective, but not offensively or aggressively dominating. He dominates, however, because of his effectiveness.

Increase your effectiveness as a salesman, and you will increase your law of averages!

Fundamental Principles of the Process

You may not think of your industry as a Statue of Liberty in the Harbor of Modern Home-making, but it is precisely that. In the realization of this fact, the gas salesman cannot fail to feel his dignity, his importance and his deep responsibility. In gas more than any other force lies our hope for the kind of American homes that produce the fine American citizenship we must have for the future of our country.

RUN GAS OPERATED CAFETERIAS

(Continued from page 532)

with seating capacity of 300. Meals are served at cost. There is an employees' band which plays during part of the meal.

The kitchen equipment is made up of two solid top Garland gas ranges, gas water heater, gas coffee urns, etc.

A nursery department is maintained where small children of the mothers are served with free food, cooked and served. This department is under nurses who provide hot baths, sleeping quarters and playgrounds. Children from six weeks to ten years of age are thus cared for while the mothers are at work.

Cafeteria in Lamp Works

The Oakland Mazda Lamp Works operates a cafeteria at the cost of provisions and serving only. The management says that the increased efficiency received from the employees by reason of having hot, wholesome, well-cooked food has proven a paying investment. The kitchen equipment consists of two sections of French top gas hotel ranges, serving gas steam tables, gas milk, coffee and chocolate urns, gas water heater and small ovens.

The Bethlehem Shipbuilding Corporation maintains a dining room with a capacity for 1,000. In the kitchen there are four large gas units, nine feet each, with syphon blast burners with 116x24 inch ovens. Hot water is carried by automatic gas storage system and dish washing done by stacking the dishes in crates and then passing the crates into a shower box.

Experience demonstrates that a cafeteria is more satisfactory where the company operates it at cost price, rather than have it run by a third party on a commission basis. New factories figure on cafeteria features as part of the plant, while the old factories are gradually, one by one, making the installation.

Our Plant
YOUR Service
We refer with pride to "our" mains, "our" gas plant, "our" system.
And they are ours.
But the service they provide is yours —just as much as if you personally provided it.
Moreover, you get that service with less trouble and inconvenience than if you had to produce it.
—more cheaply, too.
"If it's done with Heat—you can do it Better with GAS"
(Your Name and Address Here)
A.G.A.-490
The Gas Company a Part of the Community

CONTROL IN A GAS WORKS

(Continued from page 526)

Advantages of an Accurate Measuring Process

There are, of course, certain determinations which are not of prime importance and for whose determination considerable time must be available. It is customary to make these determinations by apparatus which is not automatic. This apparatus may also be used for determining the accuracy of the recording automatic devices that are employed in the gas works.

The main advantage of a well-organized system of control of gas works' operations is that it saves time in detecting errors in the manufacturing process and by quickly locating disturbances that take place in the process makes it possible to take steps to remedy the deficiencies in due time.

It is also a fact that although the automatic recording type of regulating instruments yield results of special value to the gas man, and although they act as true watch dogs of the works, nevertheless they are not appreciated as they should be by the average gas man. They are not handled properly on the gas works and are very often abused. Abused instruments cannot, of course, give the results that are expected of these apparatus, but often the fact that the apparatus has been abused is not taken into consideration when an error is found in them.

Apparatus Often Abused

Automatic operating instruments are not apparatus that should be worked or manipulated with iron rods, for example, or other less suitable objects. Great care must be taken of these apparatus and if it becomes necessary to adjust or set them the operation should be very carefully performed and the proper means employed for moving the adjusting and setting devices.

The function of the gas works is, of course, to convert the thermal values which are contained in coal into the gaseous form, hence in a better condition to be used in the domestic or industrial burner. This function may be considered to be of a duofold nature.

Thus, in the first place, it may consist of the conversion of the thermal values in coal into new products with a minimum consumption of energy in the conversion or gasification process.

Then, again, the conversion may be considered

as being conducted in such fashion that a maximum of new products is obtained and that their quality is of the best.

Instruments Suited for Each Purpose

The first group of measuring instruments, consequently, embraces apparatus for controlling the heat economy of the gasification process, and the second class of instruments is employed for the purpose of controlling the properties of the products that are obtained in the gasification.

In the first place, a few words must be said regarding the heat economy side of the problem. The efficiency of any technical firing installation rests on the production and utilization of a temperature drop, consequently on the difference between an initial temperature and a final temperature. The greater the initial temperature T and the smaller the final temperature t, the more favorable the gross efficiency. Thus the gross efficient is equal to $\frac{T-t}{T}$ $\times$ 100 per cent.

The highest value is obtained for T when the combustion is carried out in such a fashion that only just the quantity of air that is required for its complete combustion is fed to the combustible. Any excess air that is added to the installation acts as a diluent of the fire gases and results in a reduction of the initial temperature. On the other hand, when insufficient air is present for complete combustion, then there is a loss in unburned combustible.

Determination of the Initial Temperature

The determination of the initial temperature T is carried in general—as it can be measured by direct means only in rare cases—through indirect means by establishing the carbon dioxide content of the flue gases. In all cases of firing, particularly in gas firing, in which the ratio of the air to gas is maintained constant at any point by shifting the position of the air valve, the possibility exists that the combustion is taking place with lack of sufficient air to make it complete, so that incompletely burned gases are evolved, which connotes a considerable loss of heat.

In the case of a producer gas, made from coke, without the addition of steam, a gas may be obtained which has the following composition: 25 per cent carbon monoxide, 6 per cent of carbon dioxide and 69 per cent of nitrogen. In so far as only 2.5 per cent of carbon monoxide is contained in the flue gas in this case, there are already losses of heat due to incomplete combustion amounting to approximately 15 per cent.

It, therefore, follows that a determination of the incompleteness or the completeness of the combustion process by establishing the carbon monoxide content with the aid of a continuous recording device is therefore of considerable importance. The determination of t, or the end temperature, can always be carried out by direct methods of mensuration.

Draft Pressure

An important aid in facilitating the regulation of the furnace is the determination of the draft pressure. The measurement of the draft pressure always gives an accurate picture of the load on the chimney, of the action of the atmosphere whose effect on the draft in the chimney is not given the proper consideration that it deserves. Then, again, the control of the draft in the furnace affords an idea of how the admittance of air should be regulated.

The continuous recording of the suction effect in the air lines and in the chimney as well is of very great aid in maintaining a condition of equilibrium within the furnace. Individual measurement of the draft pressure, carried out periodically, must be considered as a makeshift affair only.

Maintenance of Uniform Temperature

The maintenance of a uniform temperature in the furnaces is aided most emphatically by making a great many direct measurements of the temperature in the heating passages and in the interior of the degasification space. Too high temperatures in the gasification space means too high costs in firing the furnaces and gives rise to clogging up the standpipes and decrease the quality of the gas. Too low temperatures in the gasification area are disadvantageous in the manufacture of water gas in retorts and chambers, because the steam is then incompletely decomposed and the tarry and ammoniacal ingredients in the gas are obtained mixed with very large amounts of water, which render them hard to merchandise.

These are methods of regulation that are applied in large gas works. The gas production must also be of the proper quality so that it can be profitably utilized.

The principal indicators of the degree of usefulness of the gas are uniform quality and purity. Uniform quality, which refers to the composition of the gas as well as to its heating value, must be obtained for the following reasons:

Importance of Uniform Quality of Gas

In the first place, the burners in which the gas is employed and which are used both in the home and in industry can adjust themselves to variations in the quality of the gas only to a limited extent, whether these variations be either in an upward or downward direction. In the second case, inasmuch as gas is purchased and paid for on the volume basis, it is necessary carefully to watch the composition of the gas so that the thermal value of a unit volume of the gas remains unchanged. What the consumer actually buys is not so many cubic feet of gas, but the heat that is contained in that number of cubic feet. Hence, when a price is set per cubic foot of the gas at a certain definite thermal value, it is up to the gas company to see that the heat units in the unit volume of gas correspond to the figure at which the gas rate has been calculated.

The first condition which applies to the manufac-

ture of a gas of uniform composition is connected with the regulation of the operation of the fans that suck the gas out of the retorts. It is essential to measure accurately and continuously the pressure or, rather, the suction that exists in the line between the fans and the condensers.

Determination of the Specific Gravity

The first insight that is given into the composition of the gas is obtained from observation of the specific gravity of the gas. To be sure, this is only a rough check on the composition of the gas, but it has its value, nevertheless. Although this determination does not yield any conclusive information as to whether or not the heating value of the gas is up to normal, on the other hand, it gives the operator at the suction apparatus important information on any changes that take place in the composition of the gas which are not under his control, such as the infiltration of flue gases through cracks in the settings of the retorts, and the like. It makes no difference whether coal gas or a mixture of coal gas and water gas is being made in the retorts, when flue gas infiltrates into the gas obtained in the process, the result is an increase in its specific gravity. This is easily detected by means of an instrument that measures specific gravity.

Heating Value

Of course, the most important control that is exercised on the gaseous production is the determination of the heating value of the gas, and this is particularly important in the case of city gas. It is, therefore, absolutely essential that the gaseous production be treated continuously and accurately to determine its heating value, and if that is done it is not necessary to make determinations of the special gravity of the gas as well.

Testing the quality of the gas by measuring the height of the flame produced by a burning jet of gas under definite pressure conditions, etc., by measuring the quantity of air that is required for complete combustion of the gas in a Bunsen burner, etc., are only crude methods for determining the quality of the gas, but they are useful under special circumstances. They should not, however, take the place of an accurate test made with the aid of a calorimeter of one type or another to determine the thermal value of the gas.

Testing the Purity of the Gas

The determination of the purity of a gas is followed out along two lines. In the first place, tests are made to determine the presence of injurious gases and vapors, such as tar vapors, ammonia, sulphur compounds, etc. In the second place, examination of the gas is made for the purpose of establishing whether it contains ingredients and how much of them, which are in themselves not harmful in any way, but which are of no value in the utilization of the gas and which under certain conditions might give rise to difficulties. Such gases as carbon dioxide, oxygen and nitrogen are referred to.

All the gases in this group—carbon dioxide, oxygen and nitrogen—are inert gases and hence they do not yield any heat in the combustion process. Hence it follows that it is important to see that the proportion of these gases in city gas be limited as far as possible. The transportation of these gases through the distribution system is merely a load on the system for which there is no return.

Nitrogen is only a diluent and has the effect of lowering the heating value of gas. It is evolved only in very small proportions from the nitrogen that is contained in the coal. The greatest portion of the nitrogen found in the gas is derived from external sources, resulting from strong suction, causing the infiltration of flue gases through cracks and leaks in the walls of the retorts and retort settings. In this manner it is possible for quite large volumes of nitrogen to penetrate into the retorts and become mixed with the gas. It is for this reason that the nitrogen determination has been considered for so many years as one of the most important tests that can be carried out on gas.

This determination can be effected by means of an automatic recording instrument. The use of such an instrument for this purpose is very advantageous for it saves time and trouble and gives a running history of the composition of the gas.

Carbon Dioxide

Carbon dioxide is formed just like nitrogen during the carbonization of the coal in the retort, and the amount of carbon dioxide which is thus evolved varies in accordance with the geological age of the coal that is employed in the gas-making process. The younger the coal the more carbon dioxide will be found in the gas that is manufactured from it.

Furthermore, the carbon dioxide content of the gas is increased to a considerable extent by admixture with flue gas in the same manner as has been described under nitrogen. Then, again, carbon dioxide acts not only as an inert gas, as in the case of nitrogen, but in the presence of water vapor and oxygen it engenders chemical reactions which result in the destruction of the metal with which it comes in contact. This destructive action of the gas is particularly emphasized when there is a considerable proportion of oxygen in it.

Oxygen Content of the Gas

The oxygen that is found in small proportions in manufactured gas is derived from the air which filters into the retort on opening the door of the same for the purpose of charging the coal. However, the oxygen content of the gas is mostly so small that some oxygen is purposely added to the gas for the purpose of regenerating the spent oxide. However, this quantity of oxygen must be measured out so carefully that the gas on leaving the regenerating equipment should be as free as possible from this gas. Hence it follows that it is necessary to exercise a continuous control of the oxygen content of the gas at a point in the gas line after the sulphur purification apparatus, for when this is done it is possible to maintain the proportion of oxygen in the purified

gas at a minimum. Then corrosion brought about by its presence is hardly to be expected.

The Control in the Laboratory

This is in fine the series of methods that are employed in controlling the production and the quality of the gas. Control of the gas by laboratory methods which involve the personal factor is a thing of the past in the progressive gas works. Most of the control is now carried out by automatic recording means and there are on the market today a number of instruments which are eminently well suited for this purpose. The role of the chemist in the modern gas works is therefore rather that of directing the operations than of exercising control over them. Of course, there are still tests which must be carried out by the chemist, but these involve chemical analyses of the by-products and the raw materials that are employed in the works and such analyses are not carried out so frequently as the testing of the gas, which is a matter of hourly recording, at the least.

Size of the Works and Testing System

Of course, the conditions vary according to the size of the gas works, and it is not necessary that all the tests be carried out by the small gas works that are recommended to the large plant. Thus, as far as laboratory control is concerned in the small gas company, the tests may be limited to the determination of the carbon dioxide and oxygen in the flue gas, of the carbon dioxide and the nitrogen in the coal gas, and, finally, to the determination of the heating value of the manufactured gas, whether it is coal gas or water gas. It is also necessary to exercise some control over the ammonia washing process to see that the removal of the ammonia from the gas is complete, and it is similarly necessary from time to time to test the effectiveness of the sulphur purification equipment.

There are, of course, other tests of the by-products that are derived from the gas which have not been mentioned here. These pertain to the testing of the tar to determine its water content. This is at best a very difficult matter, and the methods which are recommended for this purpose give results which vary considerably. Furthermore, there are the chemical analyses which may be made on the gas itself to determine its exact composition as well as the naphthalene content, but these determinations are very difficult to carry out and they are beyond the skill of the average chemist. Furthermore, they are not so important by any means as the other tests which have been described.

The Individual Instruments Employed

(The remainder of the German article is concerned with a rather detailed description of the various instruments that are employed for the automatic control of the gas-making process, as well as of the properties of the gas itself. It is not possible to give this information in this abstracted translation, for want of space. Numerous examples are given. A particularly interesting instrument is the one that is employed to measure the temperature within the gasification space. This is in the nature of a photo-active device, as may be seen from figure 2. It may be observed therefrom that the rays that are emanated from the hot walls of the retort are focused on the thermo-element and in this manner a current is engendered through the galvanometer which moves a pointer along a graduated scale. The temperature can, therefore, be read off directly.

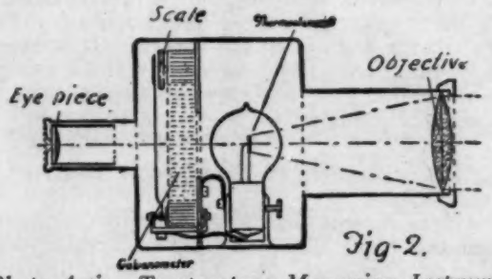


Photo-Active Temperature Measuring Instrument

Other instruments described are the automatic thermal value recorder, the automatic specific gravity instrument, the automatic carbon dioxide and carbon monoxide recorders, as well as instruments for measuring the pressure in the gas line.—Trans.)

SELLING HOUSEHEATING

(Continued from page 530)

But in closing let me state that in my opinion the wasteful use of fuel is wrong—the scientific use of gas for househeating is right. Wrong never triumphs over right. Fundamentally gas househeating is a necessity. Once established as the true way of heating, all discussions of peak loads and demand charges cannot make truths untrue. Truth cast down will rise again.

It is as impossible to enslave a freed man into the bondage of stoking as it is to stem the tide of the ocean. As well all of us here join hands and try to hold back Atlantic's mighty swell as to attempt to stem the tide of the popularity of gas heating!

I spoke of the Moses, way out West, who stood on the mount and beheld the promised land; well, where there is a Moses there's bound to arise a Joshua to lead us across the Jordan, the Jordan of our perplexities, doubts and fears!

NOTICE

In our issue of October 31 appeared a page plate showing various officers and employees of the Brooklyn Union Gas Company who had served the company for over 40 years and upwards. Through an error the proper term of service was not indicated in each case. They should have read as follows:

J. H. Jourdan, president, 43 years; A. F. Staniford, vice-president, 44 years; James Clarke, 51 years; Thomas Roach, 51 years; Michael Shay, 50 years; E. J. Byrne, 53 years; B. Kotchie, 51 years; E. Du Cret, 52 years; P. McIntyre, 51 years; Frank J. McIntyre, 60 years; Michael H. Maloney, 57 years.

NEWS OF THE GAS INDUSTRY

Illinois Light & Power Co. Personnel Reorganized

St. Louis, Mo.—Announcement has been made by the Illinois Power & Light Corporation of the reorganization of that company's Southern division. W. A. Bertke, who has been manager of the East St. Louis, Illinois, district office, and manager of the gas department of the Southern division, has been transferred to the St. Louis office and will be in charge of all gas properties, city electrical railway and bus properties in the Southern division. M. R. Noack, formerly division accountant of the Southern division, will succeed Bertke as local manager in East St. Louis.

E. C. Collier has been transferred from the East St. Louis office to the St. Louis office of the company and hereafter will have charge of the gas and electric sales in the Southern division. Sam C. Schmuelback, who has been Collier's assistant in East St. Louis, will be in charge of sales in that city.

The Illinois Power & Light Corporation's Southern division operates approximately 145 electric utilities, 13 gas utilities and several water, street railway and bus companies. Clement Studebaker is president and W. A. Beahr vice-president of the company.

Sarasota Seeks Bids from Gas Companies

The gas franchise, as drawn by Commissioner of Public Works Brumby, with the assistance of gas experts of St. Petersburg, was approved at a meeting of the City Council.

It is expected the franchise will be sent to a number of interested concerns, who are expected to make bids within 30 days.

The franchise provides that the company buying it must furnish gas to the entire city within a limited time and at an expense not to exceed $2.25 per 1,000 feet, the cost to be lowered as the consumption increases. It is estimated the franchise will sell for approximately $25,000.

Gas Merger Bill Ordered Prepared

Washington, D. C.—Secretary Earl V. Fisher, of the Public Utilities Commission, was instructed recently to prepare for submission to Congress a bill authorizing a merger of the Washington and Georgetown Gas Light companies. The former owns the latter.

It is understood that no decision has been reached by the commission to press the merger. It is merely under consideration. Maj. W. E. R. Covell, assistant to the engineer commissioner, said that regulation of gas service would be made less difficult if the two companies became one.

C. H. Nettleton, Gas Pioneer, Dies at 75

Charles Hine Nettleton, aged 75, president of the New Haven Gas Light Company, and an officer in other industrial and financial corporations, died last week. He was in attendance at a meeting of the board of directors of the Security Insurance Company.

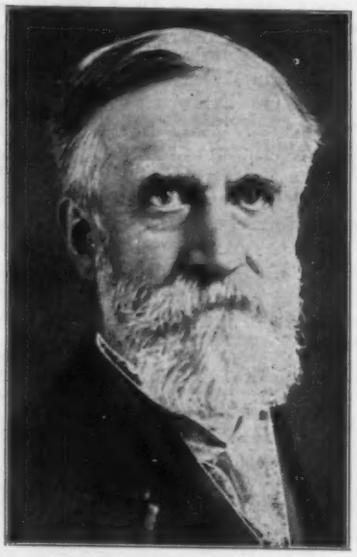
Mr. Nettleton is survived by his widow, Katherine Arnold Nettleton, and by two daughters, Miss Katherine Arnold Nettleton of Derby and Mrs. J. Cook McClure of New Haven. A niece, Miss Susan Arnold Norcross, and a nephew, J. Arnold Norcross, secretary and treasurer of the gas company, also survive him. There were three grandchildren.

Mr. Nettleton was for 25 years president of the gas company. He succeeded the late Daniel Trowbridge and it was during Mr. Nettleton's administration of affairs of the gas light company that it made such rapid strides in development and success.

During his administration the stockholders of the gas company have seen a wonderful expansion of the plant here and the replacement of old equipment with modern methods for the manufacture of gas and by-products.

Early Days at Derby

In his early days at Derby Mr. Nettleton personally performed most of the tasks necessary to the running of the gas company. He read the meters, kept the books, made out and collected the bills, acted as his own new business agent, and at the same time acted as manager in every respect. His 50th anniversary as an officer of the Derby Gas & Electric Company was fittingly celebrated by the directors, officers and staff on August 1, 1921.



Charles H. Nettleton

His progressive spirit, foresight and judgment are notably shown by the following two facts: He caused the Derby Gas Company to go into the electric business in 1885, thus forming one of the first examples of a combination gas and electric company in the world. He also had the distinction of having read the first paper before the American gas industry on the sub-

ject of "Cooking by Gas." This was read before the American Gaslight Association in 1896, told of his success in the effort to introduce gas cooking in Derby and foretold the great future in store for the gas companies in that line of usefulness.

He was president and general manager of the Birmingham Water Company and president of the Birmingham National Bank.

He was born in New Haven June 29, 1850, the son of Charles Nettleton, a lawyer by profession and the founder of the Derby and Mount Vernon gas companies. His early education was obtained in New York and in the Gunnery School at Washington, Conn. He later took a scientific course in the University of the City of New York, taking the degree of B. S. in 1870.

From 1890 to 1891 he was president of the American Gas Company of Philadelphia. He was made president of the New Haven Gas Company in 1900. He was a member of the Phi Beta Kappa, honorary scholastic fraternity, and the Alpha Delta Phi, social fraternity. He belonged to the Graduates Club, Quinnipiack Club, New Haven Lawn Club and the New Haven Country Club. He was also a member of the Lotus Club and the Alpha Delta Phi Club of New York, the Matigouche Fish Club of Canada, of which he was president for nine years. He was also a 32d degree Mason and Knight Templar.

A. W. Taber Appointed District Manager

A. W. Taber, who has for several years been connected with the indicating and recording instrument business as a sales engineer for the Foxboro Co., Inc., in their Boston territory, has been appointed Southern District manager in charge of the company's office recently transferred to the Atlanta Trust building, Atlanta, Georgia.

Wickes Boiler Co. Makes Announcement

The Wickes Boiler Company of Saginaw, Michigan, announces the election of Mr. Edward B. Wickes as vice-president and the appointment of Mr. Henry E. Aldrich as general sales manager of the company.

New Rate Sought for Gas Heating

Hait, Mich. — The Federated Utilities Company, of which the Owosso Gas Company is a subsidiary, has filed a petition with the Public Utilities Commission asking permission to put into effect here a rate of 85 cents per thousand cubic feet for gas used in heating homes.

The present rate on gas for cooking and lighting purposes ranges from $1.10 to $1.85 per thousand cubic feet. The new rate would not affect the prices charged for heating and lighting.

Southern Counties Gas Co. Plans Improvements—New Holder to Be Erected

Santa Ana, Cal.—That this city and Orange County, of which this city is the county seat, are enjoying a steady growth is evidenced by the fact that the Southern Counties Gas Company, which serves this section, is building four gas holders here to meet increasing demands for gas service. The new equipment will materially assist the company in serving constant pressure, even on the coldest winter's day, when the demands for gas are greatest. The cost of the improvement will be approximately $120,000.

The new equipment consists of four horizontal cylindrical steel tanks with hemispherical ends. The tanks will be parallel to one another and will rest on concrete foundations. Each tank will be 27 feet 8 inches in diameter and 145 feet long. The total net capacity of these four units will be one million cubic feet. Upon completion the four holders will differ considerably from the ordinary telescopic holders so commonly identified with the gas industry.

The gas will be stored under a moderate pressure in the four tanks and sent into the local distribution mains automatically without the aid of compression machinery or manual attendants. The company will store gas in the new tanks during the "off-peak" periods. The four units will automatically fill at night and during the day when the demand for service increases they will discharge their contents into the local distribution mains, should the pressure on those mains drop below five pounds.

J. C. Hayden, district manager of the Southern Counties Gas Company's properties, points out that the four tanks will function at all times when the demands exceed the delivering capacity of the local transmission lines. On such occasions the tanks will automatically pour additional gas into the mains, assisting the utility in maintaining constant, unvarying pressure when the demand exceeds the volume of gas which can be delivered into the distribution system by the transmission mains.

The Southern Counties Gas Company not only serves Orange County but several other counties in Southern California outside of Los Angeles County. The concern, although a comparatively young company, has progressed wonderfully and is continuing to make splendid strides ahead all the time.

One of the interesting features about this company is the splendid type of office buildings it uses. These buildings are in the prevailing Southern California architecture and are notable for their neatness and cleanliness and attractiveness.

Ammonia as Sulphate

The advent of synthetic ammonia is creating a condition in the gas industry wherein it may become difficult to dispose of ammonia recovered from coal gas, as such. There appears to be a solution of this problem in converting the ammonia into sulphate of ammonia.

Weiss & Downs, consulting chemists, who have had considerable experience in the by-product field, are offering their services to the gas industry in solving its ammonia problem.

Standard Gas Equipment Corp. Appoints Pacific Coast Distributors

The Standard Gas Equipment Corporation announce that the Northwest Gas & Electric Equipment Company of Portland, Ore., have been appointed exclusive Pacific Coast distributors for all three divisions, namely, Vulcan, Oriole and Triplex. This organization has for several years been exclusive Pacific Coast distributors for Smoothtop ranges and Vulcan hotel gas equipment. By the new arrangement they will also distribute Oriole and Triplex gas ranges. W. M. Kapus is president of the Northwest Gas & Electric Equipment Company, which has an extensive selling organization with branch offices at Los Angeles and San Francisco.

Foxboro Co. Moves Southern Office

The Foxboro Co., Inc., of Foxboro, Mass., manufacturers of indicating, recording and controlling instruments, announce the transfer of their Southern office to Room 426, Atlanta Trust building, Atlanta, Georgia. This office, which was previously situated in Birmingham, will be in charge of Mr. A. W. Taber, who has for several years been connected with the Foxboro Company as a sales engineer.

New Rates at Rocky Mount, N. C.

Gas rate effective December 1, 1925: Gross rate, $1.70 per 1,000 cu. ft.; first 4,000 cu. ft., 10c per 1,000 cash discount; from 4,000 cu. ft. to 20,000 cu. ft., 30c per 1,000 cash discount; from 20,000 cu. ft. to 40,000 cu. ft., 40c per 1,000 cash discount; over 40,000 cu. ft. used in one month, 50c per 1,000 cash discount.

Present rate: Gross rate, $1.70 per 1,000 cu. ft.; first 10,000 cu. ft., 10c per 1,000 cash discount; from 10,000 to 20,000 cu. ft. used in one month, 20c per 1,000 cash discount; from 20,000 to 30,000 cu. ft. used in one month, 30c per 1,000 cash discount; from 30,000 to 40,000 cu. ft. used in one month, 40c per 1,000 cash discount; over 40,000 cu. ft. used in one month, 50c per 1,000 cash discount.

New England News

Items from Various Companies in New England

Boston, Mass.—The Beacon Oil Company, through its treasurer, E. N. Wrightinton, has declared a quarterly dividend of $1.875 upon the preferred shares, payable November 16, to stock of record November 2.

Springfield, Mass.—The Springfield Gas Light Company has been granted a building permit by the city of Springfield to make additions to buildings at 35 State street at a cost of $6,000.

Newport, R. I.—The Newport Gas Light Company is installing a new type of street gas lamps on Kay street, replacing the upright single mantle burners which have been the rule for some years. The new type is a light consisting of two inverted mantles, which give a brighter light than the other and add to the illumination of Kay street, which is darker than other streets because of the overhanging trees.

Boston, Mass.—The Commission on Public Utilities has approved the issue of 10,952 shares of capital stock with a $25 par value by the West Boston Gas Company. These shares are to be sold for $25 and the proceeds applied to the payment of an issue of 7 per cent bonds, due April 1, 1926, amounting to $160,000, and the balance to the payment of notes outstanding on June 30, 1925.

Providence, R. I.—The $628,000 issue of series A, Providence Gas Company 5½ per cent first mortgage bonds, upon which bids were asked, has been awarded to Brown, Lisle & Marshall, according to a statement of President Charles H. Manchester. Mr. Manchester stated that the concern bid $105,-261 for the entire issue. Bids were submitted by 18 other bond houses. With the issuance of the present $628,000 of bonds, the total bonded indebtedness of the Providence Gas Company will be $2,800,000.

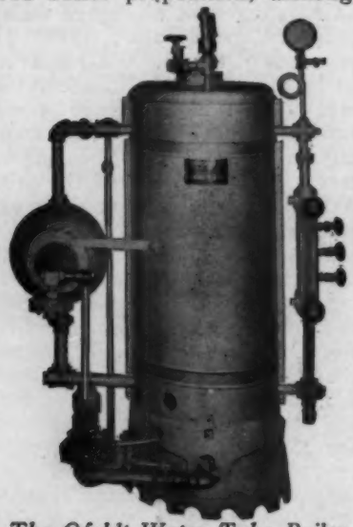
Worcester, Mass.—The Commission on Public Utilities has approved the petition of the Worcester Gas Light Company for an issue of bonds to the face value of $1,500,000 at not less than par, plus accrued interest, and bearing interest at not more than 5 per cent. These bonds are to be dated July 1, 1919, and are to be payable in not more than 20 years. The issue is to be part of a total issue of not more than $5,000,000 covered by an existing first mortgage on the property, dated July 1, 1919. The proceeds of the $1,500,000 issue are to be applied solely to the retirement of the mortgage bonds, amounting to $1,400,000 outstanding on June 30, 1925, bearing interest at 6 per cent, and the $100,-000 balance to apply on notes outstanding on the same date.

Boston, Mass.—The Public Utilities Commission has held a hearing at the State House on the petition of the Beverly Gas and Electric Company to issue 11,000 new shares of stock with a par value of $25, to be sold at $55 to the present stockholders, of whom there are 33,000. D. E. Manson, president of the company, said that the purpose of the proposed issue is chiefly to pay off outstanding notes on money borrowed during the last five years for additions and improvements. Questioned by Commissioner Everett E. Stone, Mr. Manson said the company has paid a dividend of 12 per cent the last two years. The price at which shares of the company were sold on the market, Mr. Manson said, was about $80, leaving a difference of $25 between the last market price and the price at which it is proposed to sell the new stock. In answer to a question, Mr. Manson said that the North Boston Lighting Associates owned 65 per cent of the stock of the Beverly company. Acting Chairman David A. Ellis of the commission said that the petition would be turned over to the accounting division of the commission for consideration.

Keene, N. H.—Stockholders of the Keene Gas and Electric Company have received a letter from officials of the company announcing that "reliable parties" have made an offer of $400 a share for the stock of the company. This offer is conditional on the acceptance of 85 per cent of the stockholders, according to the letter. The capitalization of the company is $300,000. It is believed that the "reliable parties" may be the Insull interests.

Mears-Kane-Ofeldt Exhibit at Atlantic City

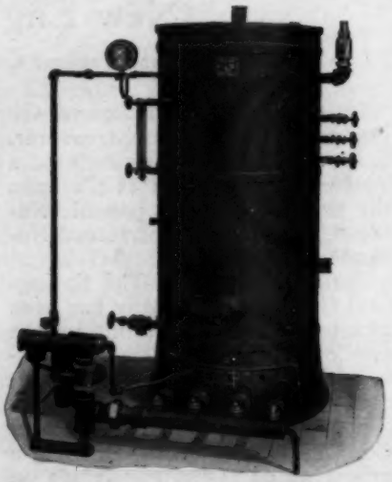
Mears-Kane-Ofeldt, Inc., exhibited the Kane (fire tube) and the Ofeldt (water tube) gas-fired automatic boilers—either of these boilers can be applied to every gas-fired boiler proposition, although



The Ofeldt Water Tube Boiler

in many cases one will render somewhat better service than the other, depending entirely on conditions to be met.

The low operating costs of these boilers have contributed to their popularity wherever steam at high



The Kane Fire Tube Boiler

or low pressure is needed for industrial or commeroial purposes.

The Kane automatic gas-fired house-heating boiler was also displayed. This boiler is of the cast iron sectional type and is used for low pressure work only, such as space or water heating.

Other items manufactured by Mears-Kane-Ofeldt, Inc., and displayed in their booth were the Kane auto cleaning outfit, Kane atmospheric gas burners for industrial purposes and the patented cast brass sectional Las-ten heater for continuous industrial service.

The Sterling Model "X"

We are really kids in the gas range business as far as straight gas ranges go, but we were making combination ranges for many years, so that, after all, we have had pretty good grounding on fundamentals and many of our combination ranges have had many innovations on them.

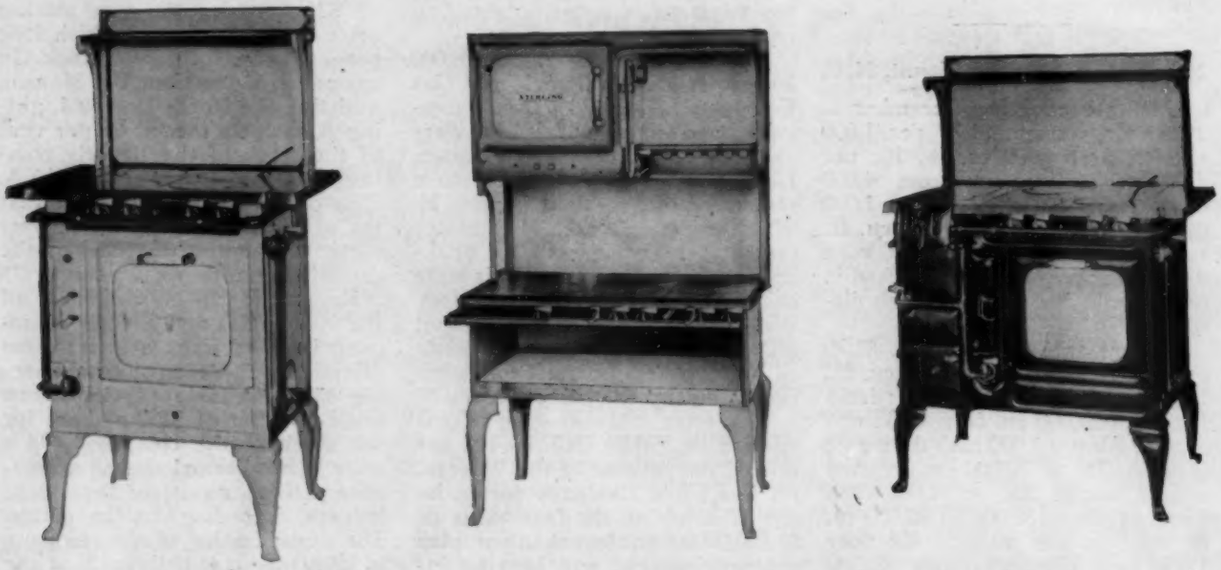
However, we have never put out an article, though we have had many unusually successful ones, that we expect to meet the needs of the buying public and the admiration of buyers as the new Model "X," made by the Sterling Range and Furnace Company.

In the matter of looks this new range is an eye-ful.

The Model "X" is a very positive example of our quality policy. Every bit of construction is up to A. G. A. standards or better.

Then an important feature is the new combination open or closed top, which operates with the greatest efficiency for either the small family or the large.

Baking can be done on both the bottom and top rack at the same time. Because of the special design we have been enabled to increase the efficiency and speed of the oven by using a different design which acts as the speed burner.



Three Styles of Sterling Ranges Shown at Atlantic City Exhibit, A. G. A. Convention